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August 14, 2002

TO: Minerals File

FROM: Paul Baker and Doug Jensen, Senior Reclamation Specialists

RE: Site Inspection, Magnesium Corporation of America, Rowley-Stansbury Project, M/045/008, Tooele County, Utah

Date of Inspection:	August 1, 2002
Time of Inspection:	8:35 a.m. to about 1:00 p.m.
Conditions:	Hazy, clear, 80-90's
Participants:	Tom Tripp and Ron Hale, Magcorp (U. S. Magnesium); Doug Jensen and Paul Baker, DOGM

Purpose of Inspection:

The purpose of the inspection was to look at areas disturbed for borrow material for roads and dikes and at those areas where oolitic sands were mined. We wanted to see in which areas revegetation might be practical and those areas where it is unnecessary or unlikely to succeed.

Getting to the site:

The report for the December 26, 2001, inspection describes how to get to the site.

Observations:

We first looked at the borrow areas. There are diverse conditions in these areas: some places have good natural revegetation, some areas have almost no growth, some areas are hummocky and need to be graded, and some do not. Along the main road leading to the plant, there are some borrow areas with good stands of Indian ricegrass and other plants, and no work needs to be done in these locations.

On the east side of the borrow areas, there is one large flat area with no vegetation (Photo 1). The soils in this area are probably extremely salty, and we decided no revegetation work should be done here. There is a road on the edge of this area that should be reclaimed (Photo 2).

We looked at and discussed several other areas, including those shown in Photos 3 and 4. The terrain, the amount of vegetation and our recommendations about these areas vary depending on the conditions. Some of the species found include iodine bush, American kochia, greasewood, Indian ricegrass, bottlebrush squirreltail, basin big sage, shadscale, trident saltbush, and tamarisk.

There is a road leading north from the plant to the oolitic sands mining areas. As one travels away from the plant, this road goes north, curves east, then turns north again. The area of oolitic

Photo 1.

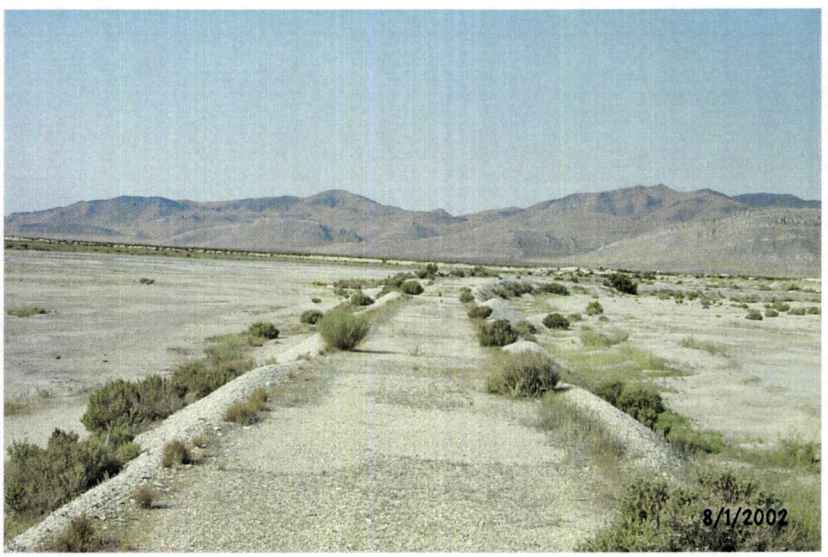

Photo 2. Road on the edge of the area shown in Photo 1.

sand mining begins near where the road turns north. At this point, there appears to have been a loading area where there are some piles of material that will need to be graded.

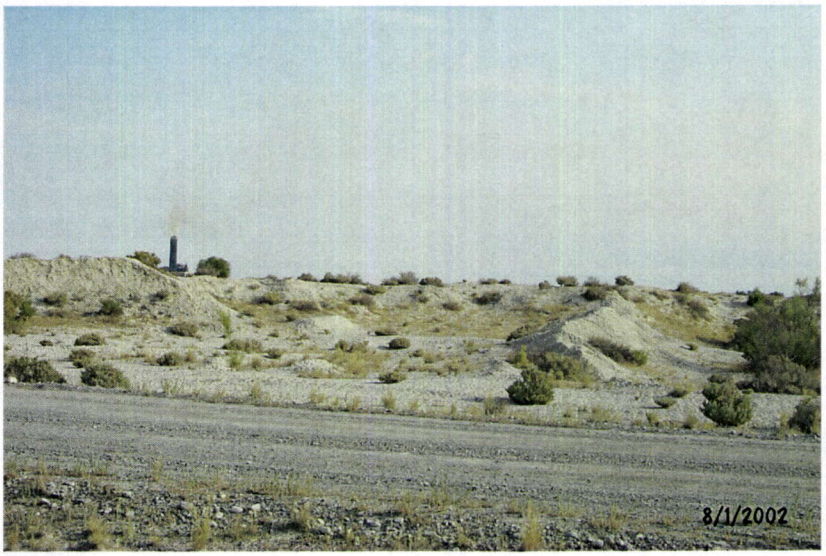

Photo 3. Borrow area.

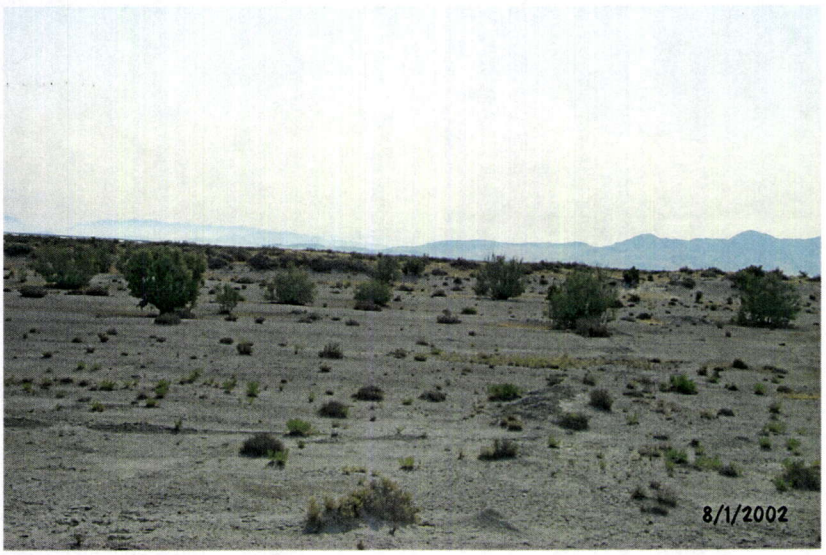

Photo 4. Borrow area.

Traveling further north, we went onto state then federal land. Although most of the disturbance has been on the west side of the road, there has been some disturbance on the east side. Mr. Tripp told us that after the oolitic sands were mined, there was some grading work done. There is some topographic variation, but there are no piles of material north of the loadout. There tend to be low areas with greasewood and a few other plants (Photo 5, narrow area near and to the right of center) and

Photo 5. Oolitic sand mining area. Most of this photo shows the weedy upland areas, but there is a depressed area near the center of the picture with a few salt tolerant plants.

areas a few feet higher in elevation where weeds, such as Russian thistle, kochia, and cheatgrass, dominate (Photo5, all of the foreground, most of the photograph).

It was not easy to find upland areas with native plants, but there were a few relic populations on the north end of the oolitic sands mining area. Species in these areas included horsebrush, shadscale, greasewood, bottlebrush squirreltail, Indian ricegrass, snakeweed, one basin big sage plant, and a shrub that looked something like rabbitbrush. Horsebrush was the dominant species.

Conclusions and Recommendations:

Included at the end of this report are recommendations for seed mixes that might be used for the borrow and oolitic sands areas.

In the borrow area south of the plant, hummocky areas similar to the area shown in Photo 3 need to be regraded and seeded. In the flatter areas where limited amounts of vegetation have established, we recommended that the operator use something like a small (four feet wide) spring tooth harrow that can be pulled by an all terrain vehicle. This way, it would be possible to break the soil crust without destroying existing vegetation. It will be necessary to seed the areas that will be graded, but no seeding should be done where there is adequate vegetation or where revegetation success is unlikely, such as the area shown in Photo 1.

The loadout area for the oolitic sands needs to be graded, and compacted areas need to be ripped at least two feet deep. The low areas probably have sodic and/or alkaline soils, and we do not think revegetation is likely to be successful in these areas. There are a lot of weeds in the more upland areas, but we believe revegetation efforts will result in establishment of some desirable plants. These areas should be

disked or otherwise scarified then seeded. Forage kochia should be broadcast seeded, but the rest of the mix could be either drill or broadcast seeded. Seeding should be done as late in the fall as conditions allow, probably about mid- to late November. Forage kochia seed does not retain its viability well, so seed of this species should be from the current year's crop. Some species in the seed mix are known to compete well with cheatgrass, and disking may kill some of the cheatgrass and improve the chances for the seeded species to become established. We anticipate that weeds will still be the dominant vegetation in these areas, but studies in nearby areas have shown that establishment of desirable species is possible in this type of situation.

Seed Mix Recommendations
Magnesium Corporation of America
M/045/008

For southern borrow areas:

Species		Pounds PLS/Acre
Shadscale	*Artiplex confertifolia*	1
Trident Saltbush	*Atriplex tridentata*	1
Forage Kochia	*Kochia prostrata*	2
Greasewood	*Sarcobatus vermiculatus*	1
Indian Ricegrass	*Oryzopsis hymenoides*	1
Bottlebrush Squirreltail	*Elymus elymoides*	1
Russian Wild Rye	*Elymus junceus*	1
Crested Wheatgrass	*Agropyron desertorum*	1

For northern oolitic sands areas:

Species		Pounds PLS/Acre	
Forage kochia	*Kochia prostrata*	2	
Shadscale	*Atriplex confertifolia*	1	
Crested Wheatgrass	*Agropyron desertorum*	2	(Suggest variety Hycrest)
Indian Ricegrass	*Oryzopsis hymenoides*	2	
Bottlebrush Squirreltail	*Elymus elymoides*	1	
Russian Wild Rye	*Elymus junceus*	1	

jb
cc: Tom Tripp, Magcorp
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